

Review on Fibroadenoma

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Abstract: - Fibroadenoma, is a painless benign breast tumors characterized by amixture of stromal and epithelial tissue. Breasts are made of lobules and ducts tubes that carry the milk to the nipple. They are mainly formed by glandular, fibrous and fatty tissue. Fibroadenoma develop from the lobules. The glandular tissue and duct grow over the lobule to form a solid lump. It occurs most commonly in young age group of women between the ages of 14 to 35 years but can be developed at any age. Fibroadenomas shrink after menopause, and so it is less common in post-menopausal women. Fibroadenomas are also referred to be a breast mouse due to their high mobility. Fibroadenomas are a marble-like mass comprising both epithelial and stromal tissues located under the skin of the breast. These are firm, rubbery masses with regular borders and are often variable in size. Fibroadenoma are of four types; complex, Juvenile, Giant fibroadenoma and Phyllodes tumor. Complex fibroadenoma has rapidly growing hyperplastic cells; the pathologist can establish diagnosis after carefully reviewing the biopsy of breast tissue. Juvenile fibroadenoma is commonly found in patient's age 10 to 18 years. These fibroadenomas has a faster growing rate and eventually shrink or disappear. Giant fibroadenoma are non-cancerous lesions that are slightly larger than other types. They commonly need excision because they compress or replace normal breast tissue.

Introduction

A fibroadenoma is a painless, unilateral, benign breast tumor that is a solid in nature. It occurs mostally in young women between the ages of 14 to 35 years but can be found at any age. Fibroadenomas shrink after menopause, and therefore, are less common in post-menopausal women. Fibroadenomas are often, referred to be a breast mouse due to their high mobility. Fibroadenomas are a marble-like mass comprising both epithelial and stromal tissues located under the skin of the breast. These are firm; rubbery masses with regular borders are often variable in size (1)(2).

Types

Complex Fibroadenoma

Faster growing hyperplastic cells; the pathologist can be establish diagnosis after careful reviewing the biopsy of the breast tissue (3).

Juvenile giant Fibro adenoma

Juvenile giant fibroadenoma is a very rare benign tumor of the breast accounting for 0.5% of all fibroadenomas the presentation is like mimic of a rare malignant tumour. This fibroadenoma is commonly found in patients with age of 10 to 18 years. These fibroadenomas has a rapidly growing tumor and eventually shrink or disappear (4).

Giant Fibroadenoma

It is non-cancerous lesion is slightly larger than other types of tumor It most often needs excision because of it compresses or replaces normal breast tissue (5).

Phyllodes Tumor

It is a stromal tumor of the breast that can be either benign or malignant. It is not a fibroadenoma, therefore; it needs to be watched closely. Mostly doctors recommend removing it (6) (7).

Etiology

Causes of fibroadenoma are exactly not known. But professionals believed that the lesion has a hormonal etiology related to the increased sensitivity of breast tissue of the female reproductive hormone estrogen. Fibroadenoma usually grows during pregnancy and tends to shrink during menopause. So this supports the hormonal etiologic theory. Some study shows that the Females who take oral contraceptives before 20 years of age. They might suffer from fibroadenoma(8)

Epidemiology

Fibroadenoma tends to occur in early age. It is most commonly found in adolescents and rarely found in postmenopausal women. The incidence of fibroadenoma decreases with increasing age and generally found before 30 years of age in females in general population. It is estimated that 10% of the world's female population suffers from fibroadenoma once in a lifetime.(8)

Pathophysiology

Hormonal

Fibroadenoma arises from stromal and epithelial connective tissue cells. Which is functionally and mechanically important in the breast these tissues contain receptors for both estrogen and progesterone. For this reason, fibroadenomas tend to proliferate during pregnancy due to excessive production of female reproductive hormones. Hormone sensitivity causes excessive proliferation of breast connective tissues.(9)

Genetics

Mediator complex subunit 12 (MED12) gene is also important in the pathophysiology of fibroadenomas.(10)(11)

Histopathology

The histological diagnostic features of fibroadenoma can be described as sheets of uniformly distributed epithelial cells that are typically arranged in a honeycomb pattern. There is a presence of foam cells and apocrine cells and an absence of excessive mitotic activity or anaplasia. Calcification may also be present. Juvenile fibroadenoma has increased in stromal cellularity. The stromas are hypo vascular as

compared to the malignant neoplasms. The basement membrane also remains intact in fibroadenoma which reflects its benign feature.(12)

Microscopic Features

Contains both stromal and epithelial tissues that are arranged in 2 patterns:

- 1. Pericanalicular:** the proliferation Includes of stromal cells around epithelial structures (13)
- 2. Intracanalicular:** The proliferation includes of stromal cells compressing epithelial cells into clefts (14)

Histological Features of Various Fibroadenomas

- 1. Complex fibroadenoma:** Sclerosingadenosis, calcification, apocrine metaplasia.
- 2. Juvenile joint fibroadenoma:** Epithelial and stromal hyperplasia, absence of mitoses, thin micro papillae.
- 3. Myxoid fibroadenoma:** Stroma has myxoid features (15)

History and Physical

Age is the most important factor in the incidence of fibroadenoma. Therefore, when obtaining a medical history, age is the most important factor that should be considered. A family history of breast cancer is significant. Female patients who have first-degree relatives with breast cancer should be monitored and observed more carefully for malignant features than patients without this family history. Fibroadenoma most commonly occurs in the upper outer quadrant of the breast. On physical examination, it has the following feature. Non-tender or painless, Mobile, Solitary, Rapidly growing solid lump with rubbery consistency and regular borders.(16)

Evaluation

After a thorough history and physical examination, the following imaging modalities are used for the diagnosis of fibroadenomas.(17)

Mammogram

A mammogram uses x-rays to evaluate the suspicious masses in women above 35 years of age. Fibroadenoma on a mammogram appears as a distinct area from other breast tissue, with smooth

round edges. See figure 1 and 2 showing fibroadenoma in both side of breast

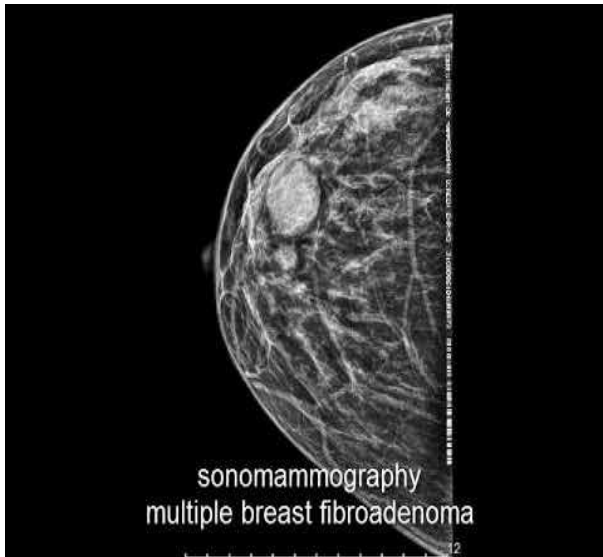


Figure 1: Sonomammography Multiple breast fibroadenoma

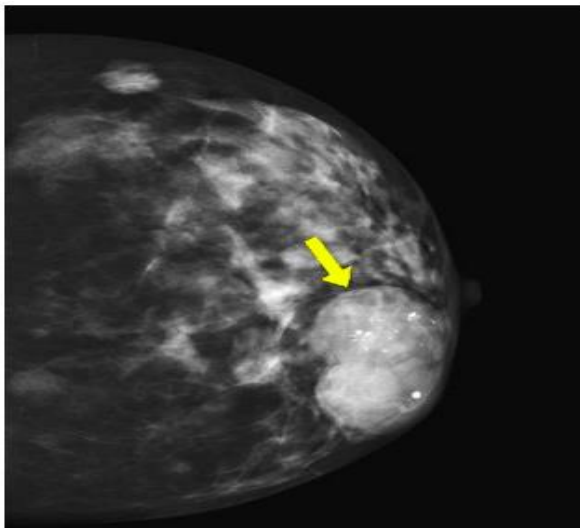


Figure 2: Fibroadenoma on mammogram.

Mammographic features of fibroadenomas are variable from a well-circumscribed oval mass hypo dense or is dense of breast glandular tissue. A mass with macro lobulation or partially obscured margins. Typically postmenopausal patients may contain calcification, often producing the classic, Popcorn calcification appearance.

Sonography

Ultrasonography has uses sound waves to detect the features of fibroadenomas in women younger than 35 years of age. USG easily differentiates solid from the cystic masses. On USG, fibroadenoma mass is typically seen as a well-circumscribed, round to

ovoid, or macrolobulated mass with generally uniform hypoechogenicity.(17)

If necessary, a minimally invasive biopsy may be performed via a core needle biopsy or FNAC also can be done sometimes

Management

In the majority of cases, fibroadenomas has needed no treatment. They shrink and disappear over time, but if their size is large and they are compressing other breast tissues, they should be removed. Many females decide against the surgery because the lesions are harmless and involve no long-term risk of malignancy. Surgery also distorts the shape of a breast.

Surgery

Doctors might decide to remove fibroadenoma if the size is massive and continues to increase in size. Indications for surgical intervention includes rapid growth, size more than 2 cm, and patient request.(18)

There are 2 surgical procedures used to remove a fibroadenoma:

Lumpectomy or excisional biopsy: In this procedure, the surgeon removes the fibroadenoma and sends it to the laboratory for further evaluation to rule out hyperplastic changes.

Cryoablation: Surgeons use a cry probe to freeze and destroy the cellular structure of fibroadenoma. A core needle biopsy must be performed before cryoablation to confirm the fibroadenoma.(17)(19)

Differential Diagnosis

Lipoma

Adenocarcinoma

Breast cyst

Breast carcinoma

Phyllodes tumor

Breast lymphoma

Metastasis to the breast from another primary site

Prognosis

Prognosis of fibroadenoma is very good because it is a benign mass which shrinks in size over time in the majority of cases.

Complications

Breast cancer risk may slight increase in patients with a complex fibroadenoma. This type of lesion may contain calcified breast tissue.

Conclusions

Fibroadenoma has been the most common benign breast tumor though not dangerous by it selves but it has tendency to become malignant. Its management is not so tough. So, there is need of more research into the picture of breast disease in the country, covering various demographic characteristics of the country's population for all regions and informing about its incidence rates and prevalence and also the breast cancer risk estimate for benign breast disease

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